Appendix B

SPECIAL CASES

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INTRODUCTION

This appendix discusses special cases that might arise where a simple BEN analysis is inappropriate. Section A addresses situations in which multiple BEN runs are required, such as cases with more than one capital cost occurring at different dates. Section B addresses cases involving avoided one-time costs, including capital costs that are avoided when the government requires closure of a facility. Section C describes methods for calculating the benefit from delayed annual expenditures, as opposed to avoided annual expenditures, such as a required period of monitoring. Finally, Section D discusses how to use BEN to calculate the economic benefit of noncompliance in cases involving municipal grants, when the grant is available in the on-time and the delay case, when the grant is no longer available when compliance is eventually achieved, and when the grant becomes available during the period of noncompliance.

A.   COMBINING MULTIPLE RUNS

1.   Introduction

In some cases it may be necessary to perform more than one BEN calculation and combine the results in order to determine the total benefit earned from delayed compliance. Such situations are likely to occur, for example, when two completely independent costs occur at different times. This could happen when the violator failed to comply with more than one requirement (e.g., violation of a NESHAPS and failure to install monitoring equipment).[1] This section gives examples of situations in which multiple runs may be required and explains how

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[1] This is in contrast with the very common situation where the violator must make a series of expenditures to comply with one requirement, but compliance is not achieved until the final expenditure is made. We assume that the sequence of expenditures is the same for both the delay and the on-time cases in these instances and all the expenditures are considered in one BEN run.

to combine the results of separate BEN runs.

2. Procedure for Economic Benefit Calculation

As a general rule, multiple runs can be combined to determine total benefit so long as the <u>penalty payment dates are the same for each calculation</u>. The user must perform a separate run for each expenditure, whether a capital investment, one-time nondepreciable expenditure, or annual expense, whenever the noncompliance dates or compliance dates of the violations differ. <u>It is essential that the penalty payment date remain the same when these separate calculations are conducted.</u>

3. Example Combining Multiple Runs

For example, assume that for on-time compliance, the following expenditures were required:

! $300,000 for the removal of hazardous waste in February 1993;

! $405,000 for pollution control equipment in February 1994; and

! $210,000 for the purchase of land in February 1994.

Instead, the company is expected to comply with all three requirements at the same time (in August 1997). The expected penalty payment date is April 1998.

For the first BEN run, input the variables as follows:

!   Variable 3 (one-time nondepreciable expenditure) = $300,000;

!   Variable 5 (date of noncompliance) = February 1993;

! Variable 6 (date of compliance) = August 1997; and

! Variable 7 (penalty payment date) = April 1998.

This first run will determine the benefit of delaying the expenditure for hazardous waste removal.

For the second BEN run, input the variables as follows:

! Variable 2 (initial capital investment) = $405,000;

! Variable 3 (one-time nondepreciable expenditure) = $210,000;

! Variable 5 (date of noncompliance) = February 1994;

! Variable 6 (date of compliance) = August 1997; and

! Variable 7 (penalty payment date) = April 1998.

This second run will determine the benefit of delaying pollution control equipment purchase and the expenditure for the purchase of land.

Example inputs are displayed in Exhibit B-1. You would then add the results of these two runs to determine the total economic benefit of $311,021. The results are shown in Exhibit B-2.

Exhibit B-1

DATA INPUTS FOR EXAMPLE COMBINING MULTIPLE RUNS

FIRST RUN

```
1)   A. Case Name            ENTITY X EXAMPLE
     B. Profitability Status 1. For-Profit
     C. Filing Status        1. C-Corporation

2)   Capital Investment      $     0

3)   One-Time Nondepreciable $300,000, 1997 dollars,
     Expenditure             tax-deductible

4)   Annual Expense          $     0

5)   Date of Noncompliance   February 1993

6)   Date of Compliance      August 1997

7)   Penalty Payment Date    April 1998

8)   Useful Life             15 Years

9)   Marginal Tax Rate -
     1986 and Before         49.6 percent

10)  Marginal Tax Rate -     38.6 percent
     1987 to 1992

11)  Marginal Tax Rate -     39.4 percent
     1993 and Beyond

12)  Inflation Rate          1.8 percent

13)  Discount Rate:  WACC    10.6 percent
```

DATA INPUTS FOR EXAMPLE COMBINING MULTIPLE RUNS

SECOND RUN

```
1)   A. Case Name            ENTITY X EXAMPLE
     B. Profitability Status  1. For-Profit
     C. Filing Status         1. C-Corporation

2)   Capital Investment      $ 405,000, 1997 dollars
                             RECURRING

3)   One-Time Nondepreciable $210,000, 1997 dollars
     Expenditure

4)   Annual Expense          $     0

5)   Date of Noncompliance   February 1994

6)   Date of Compliance      August 1997

7)   Penalty Payment Date    April 1998

8)   Useful Life             15 Years

9)   Marginal Tax Rate -
     1986 and Before         49.6 percent

10)  Marginal Tax Rate -     38.6 percent
     1987 to 1992

11)  Marginal Tax Rate-1993  39.4
     and Beyond

12)  Inflation Rate          1.8 percent

13)  Discount Rate:  WACC    10.6 percent
```

**EXAMPLE OF BEN CALCULATION COMBINING MULTIPLE RUNS
OUTPUT OPTION 2**

FIRST RUN

```
   ENTITY X EXAMPLE                        BEN VERSION 4.4 JULY 1, 1997
A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE IN 1993 DOLLARS $      169279


B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1993 DOLLARS                $      169279


C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
    CONTROL EQUIPMENT BY 54 MONTHS PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1993 DOLLARS                $      116565


D.  ECONOMIC BENEFIT OF A  54 MONTH DELAY
    IN 1993 DOLLARS (EQUALS B MINUS C)               $       52713


E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
    DATE,  62 MONTHS AFTER NONCOMPLIANCE             $       88714
                                                     =========


  ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                USED THE FOLLOWING VARIABLES:
     USER SPECIFIED VALUES
     --------------------
  1A. CASE NAME = ENTITY X EXAMPLE
  1B. PROFIT STATUS =                           FOR-PROFIT
  1C. FILING STATUS =                           C-CORPORATION
   2. INITIAL CAPITAL INVESTMENT         = $         0
   3. ONE-TIME NONDEPRECIABLE EXPENDITURE =  $    300000  1997 DOLLARS
      (TAX-DEDUCTIBLE EXPENSE)
   4. ANNUAL EXPENSE =                       $         0
   5. FIRST MONTH OF NONCOMPLIANCE =                 2, 1993
   6. COMPLIANCE DATE =                              8, 1997
   7. PENALTY PAYMENT DATE =                         4, 1998
      STANDARD VALUES
      --------------
   8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =    15 YEARS
   9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =  49.6 %
  10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =     38.6 %
  11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =  39.4 %
  12. ANNUAL INFLATION RATE =                          1.8 %
  13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL  10.6 %
```

**Exhibit B-2
(continued)**

**EXAMPLE OF BEN CALCULATION COMBINING MULTIPLE RUNS
OUTPUT OPTION 2**

SECOND RUN

```
  ENTITY X EXAMPLE                          BEN VERSION 4.4 JULY 1, 1997

A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $       470189

B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS                 $       580037

C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
    CONTROL EQUIPMENT BY 42 MONTHS PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS                 $       433941

D.  ECONOMIC BENEFIT OF A  42 MONTH DELAY
    IN 1994 DOLLARS (EQUALS B MINUS C)                 $       146097

E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
    DATE,   50 MONTHS AFTER NONCOMPLIANCE              $       222307
                                                         =========

    ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                      USED THE FOLLOWING VARIABLES:
       USER SPECIFIED VALUES
       ---------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                            FOR-PROFIT
     1C. FILING STATUS =                          C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT (RECURRING)= $     405000  1997 DOLLARS
     3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $     210000  1997 DOLLARS
      (EXPENSE IS NOT TAX-DEDUCTIBLE)
     4. ANNUAL EXPENSE =                         $        0
     5. FIRST MONTH OF NONCOMPLIANCE =                  2, 1994
     6. COMPLIANCE DATE =                               8, 1997
     7. PENALTY PAYMENT DATE =                          4, 1998

        STANDARD VALUES
        ---------------
     8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =     15 YEARS
     9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
    10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
    11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
    12. ANNUAL INFLATION RATE =                           1.8 %
    13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL   10.6 %
```

B.   AVOIDED ONE-TIME COST CALCULATIONS

1.   Introduction

In some cases, often involving a RCRA violation, a violator can completely avoid one-time capital expenditures or nondepreciable costs. This sometimes occurs when the violator delayed pollution control expenditures and the government is now seeking to close the violator's operation. Thus, the violator will never have to incur certain costs. BEN is not designed to directly address this situation. You can use BEN to accurately calculate the economic benefit by using some of the model's intermediate calculations, however. The following

discussion shows how you can use BEN to evaluate economic benefit in this type of situation.

2.   Procedure for Economic Benefit Calculation

The first step is to run BEN including only the avoided cost, be it a capital expenditure (enter as Variable 2 and select one-time) or an avoided one-time nondepreciable expense (enter as Variable 3).[2] The model will assume that it is a delayed expense, but you will use BEN's intermediate calculations to arrive at the correct answer. When you select the output option for your BEN analysis, select output Option 2. The value shown in both (A) and (B) will be the after-tax one-time capital expenditure or nondepreciable expense in noncompliance year dollars. This is the amount that the violator initially saved.

This amount, however, does not reflect the fact that the violator had use of this money from the time it should have spent the money (the noncompliance date) until it pays the civil penalty (the penalty payment date). In order to determine the total benefit, we want to multiply the value in Item (A) or (B) by the discount rate for the number of months between the noncompliance date and the penalty payment date. This calculation accounts for the appreciation of value as a result of investing the money in alternative uses.

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[2] For annual expenses, you should complete a separate BEN calculation in the usual manner and combine the results of the two runs as detailed in Section A of this appendix.

You can do this easily by using two other values presented in output Option 2. Apply the percentage increase between items (D) and (E) to the value in item (A) and (B). Thus, first determine the ratio of (E) to (D):

$$\frac{E}{D} = I$$

Then, multiply the value in (A) by I;

Economic benefit as of penalty payment date = A x I.

3.   Example of an Avoided
        One-Time Capital Expenditure Calculation

Assume, for example, that on-time compliance would have required a capital cost of $405,000 in February 1994. However, closure of the plant is required and the capital expenditure is avoided. The penalty payment is expected in April 1998. (The compliance date does not affect BEN's calculation in this instance.) In this case, you only enter a capital cost (Variable 2) and select "one-time". Example inputs are displayed in Exhibit B-3.

Once you have entered your inputs into BEN, select Output Option 2. The results are shown in Exhibit B-4. Note that the value for items (A) and (B) is $271,133. The violator avoided this amount (after-tax) in noncompliance year dollars.

Exhibit B-3

**DATA INPUTS FOR EXAMPLE OF AN AVOIDED
ONE-TIME CAPITAL EXPENDITURE CALCULATION**

```
1)   A. Case Name                        ENTITY X EXAMPLE
     B. Profitability Status             1. For-Profit
     D. Filing Status                    1. C-Corporation

2)   Capital Investment                  $    405,000 1997
                                              dollars

3)   One-Time Nondepreciable            $    0
     Expenditure

4)   Annual Expense                      $    0

5)   Date of Noncompliance               February 1994

6)   Date of Compliance                  August 1997

7)   Penalty Payment Date                April 1998

8)   Useful Life                         15 Years

9)   Marginal Tax Rate - 1986 and        49.6 percent
     Before

10)  Marginal Tax Rate - 1987 to 1992    38.6 percent

11)  Marginal Tax Rate - 1993 and        39.4 percent
Beyond

12)  Inflation Rate                      1.8 percent

13)  Discount Rate:  WACC                10.6 percent
```

Exhibit B-4

EXAMPLE OF AN AVOIDED ONE-TIME CAPITAL EXPENDITURE CALCULATION
OUTPUT OPTION 2

```
  ENTITY X EXAMPLE                       BEN VERSION 4.4 JULY 1, 1997


A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $      271133
B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS              $      271133
C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
    CONTROL EQUIPMENT BY 42 MONTHS PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS              $      202841

D.  ECONOMIC BENEFIT OF A  42 MONTH DELAY
    IN 1994 DOLLARS (EQUALS B MINUS C)             $       68292
E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
    DATE,   50 MONTHS AFTER NONCOMPLIANCE          $      103915
                                                   =========


    ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                  USED THE FOLLOWING VARIABLES:
       USER SPECIFIED VALUES
       --------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                      FOR-PROFIT
     1C. FILING STATUS =                      C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT (ONE TIME) = $    405000  1997          DOLLARS
      3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $        0
      4. ANNUAL EXPENSE =                        $        0
      5. FIRST MONTH OF NONCOMPLIANCE =                  2, 1994
      6. COMPLIANCE DATE =                               8, 1997
      7. PENALTY PAYMENT DATE =                          4, 1998
        STANDARD VALUES
         -------------
      8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =     15 YEARS
      9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
     10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
     11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
     12. ANNUAL INFLATION RATE =                           1.8 %
     13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL   10.6 %
```

To compute the economic benefit as of the penalty payment date, first calculate the ratio of (E) to (D):

$$I = \frac{E}{D} = \frac{\$103,915}{\$68,292} = 1.5216$$

Multiply this result by the value in (A):

$$A \times I = \$271,133 \times 1.5216 = \$412,556$$

Thus, the economic benefit resulting from the avoided one-time capital expenditure is $412,556.

**4.   Example of an Avoided
         One-Time Nondepreciable Cost Calculation**

In this example, the capital and annual costs are set to zero. The one time avoided nondepreciable expenditure (Variable 3), (for employee training, for example), is $210,000. Example inputs are displayed in Exhibit B-5.

Once you have completed your inputs, select Output Option 2. The results are shown in Exhibit B-6. Note that the value for items (A) and (B) is $120,628. The violator avoided an on-time after-tax cost of this amount in noncompliance year dollars.

To compute the economic benefit as of the penalty payment date, first calculate the ratio of (E) to (D):

$$I = \frac{E}{D} = \frac{\$46,232}{\$30,383} = 1.5216$$

Multiply this result by the value in (A) and (B):

$$A \times I = \$120,628 \times 1.5216 = \$183,548$$

Thus, the economic benefit resulting from the avoided nondepreciable expenditure is $183,548.

Exhibit B-5

**DATA INPUTS FOR EXAMPLE OF AN AVOIDED ONE-TIME
NONDEPRECIABLE COST CALCULATION**

```
1)    A. Case Name              ENTITY X EXAMPLE
      B. Profitability Status   1. For-Profit
      C. Filing Status          1. C-Corporation

2)    Capital Investment        $    0

3)    One-Time Nondepreciable   $210,000, 1997 dollars,
      Expenditure               tax-deductible

4)    Annual Expense            $    0

5)    Date of Noncompliance     February 1994

6)    Date of Compliance        August 1997

7)    Penalty Payment Date      April 1998

8)    Useful Life               15 Years

9)    Marginal Tax Rate -       49.6 percent
      1986 and Before

10)   Marginal Tax Rate -       38.6 percent
      1987 to 1992

11)   Marginal Tax Rate -       39.4 percent
      1993 and Beyond

12)   Inflation Rate            1.8 percent

13)   Discount Rate:  WACC      10.6 percent
```

Exhibit B-6

EXAMPLE OF AN AVOIDED ONE-TIME NONDEPRECIABLE COST CALCULATION
OPTION OUTPUT 2

```
ENTITY X EXAMPLE                          BEN VERSION 4.4 JULY 1, 1997


 A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
     OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $      120628
 B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
     OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
     REPLACEMENT CYCLES IN 1994 DOLLARS                $      120628
 C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
     CONTROL EQUIPMENT BY 42 MONTHS PLUS ALL FUTURE
     REPLACEMENT CYCLES IN 1994 DOLLARS                $       90245
 D.  ECONOMIC BENEFIT OF A  42 MONTH DELAY
     IN 1994 DOLLARS (EQUALS B MINUS C)               $       30383
 E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
     DATE,   50 MONTHS AFTER NONCOMPLIANCE             $       46232
                                                       =========


     ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                    USED THE FOLLOWING VARIABLES:
        USER SPECIFIED VALUES
        ---------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                          FOR-PROFIT
     1C. FILING STATUS =                          C-CORPORATION
      2. INITIAL CAPITAL INVESTMENT        = $          0
      3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $     210000  1997
DOLLARS   (TAX-DEDUCTIBLE EXPENSE)
      4. ANNUAL EXPENSE =                          $          0
      5. FIRST MONTH OF NONCOMPLIANCE =                2, 1994
      6. COMPLIANCE DATE =                             8, 1997
      7. PENALTY PAYMENT DATE =                        4, 1998
         STANDARD VALUES
         ---------------
      8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =    15 YEARS
      9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
     10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
     11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
     12. ANNUAL INFLATION RATE =                           1.8 %
     13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL   10.6 %
```

C.   DELAYED ANNUAL EXPENDITURES

1.   Introduction

In some cases, compliance may require a violator to undertake an activity for a certain period of time, such as monitoring groundwater for five years after the installation of a ground water monitoring well. Consequently, delayed compliance results in delayed, not avoided, annual expenditures in these instances. This section explains how to use BEN to determine benefit in these cases, using the guidance on combining multiple runs presented in Section A of this appendix.

2.   Procedure for Economic Benefit Calculation

In order to determine economic benefit, a separate BEN run must be performed for each annual cost. Because the cost is delayed and not avoided, it will be entered as a one-time nondepreciable expenditure (Variable 3). Again, as long as the date of penalty payment is the same in each BEN run, the resulting benefits can be added together to arrive at a total benefit figure.

3.   Example of a Delayed Annual Expenditure

For example, assume that compliance requires five years of ground-water monitoring at $20,000 per year (in 1997 dollars). The penalty is to be paid in April 1998. The date of noncompliance is February 1994 and the expected date of compliance is February 1997. Consequently, expenditures that were supposed to have taken place in 1994, 1995, 1996, 1997, and 1998 actually occur in 1997, 1998, 1999, 2000, and 2001. In each case, there is a three-year delay in compliance. Therefore, in the first run, set Variable 3, one-time nondepreciable expenditure, at $20,000. The noncompliance date (Variable 5) is February 1994 and the compliance date (Variable 6) is February 1997. The penalty payment date (Variable 7) is April 1998 in each run. You repeat this run five times, adding one year to Variables 5 and 6 each time and leaving the other variables the same. The second run would therefore have a noncompliance date of February 1995 and a compliance date of February 1998; the third run would have a noncompliance date of February 1996 and a compliance date of February

1999; and so on. Exhibit B-7 shows inputs for the first run of this example. You can then add these five results to arrive at the total economic benefit of delaying these five annual expenditures for three years. The total economic benefit is:

$$\$3,850 + \$3,543 + \$3,261 + \$3,002 + \$2,763 = \$16,419.$$

The outputs of the five runs are displayed in Exhibit B-8.

Exhibit B-7

DATA INPUTS FOR EXAMPLE OF A DELAYED ANNUAL EXPENDITURE

FIRST RUN

1)	A. Case Name	ENTITY X EXAMPLE
	B. Profitability Status	1. For-Profit
	C. Filing Status	1. C-Corporation
2)	Capital Investment	$ 0
3)	One-Time Nondepreciable Expenditure	$20,000, 1997 dollars, tax-deductible
4)	Annual Expense	$ 0
5)	Date of Noncompliance	February 1994
6)	Date of Compliance	February 1997
7)	Penalty Payment Date	April 1998
8)	Useful Life	15 Years
9)	Marginal Tax Rate - 1986 and Before	49.6 percent
10)	Marginal Tax Rate - 1987 to 1992	38.6 percent
11)	Marginal Tax Rate - 1993 and Beyond	39.4 percent
12)	Inflation Rate	1.8 percent
13)	Discount Rate: WACC	10.6 percent

December 1993 (Updated: August 1997)

Exhibit B-8

EXAMPLE OF A DELAYED ANNUAL EXPENDITURE
OUTPUT OPTION 2

FIRST RUN

```
ENTITY X EXAMPLE                         BEN VERSION 4.4 JULY 1, 1997

 A.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
      OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $       11488
 B.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
      OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
      REPLACEMENT CYCLES IN 1994 DOLLARS               $       11488
 C.   VALUE OF DELAYING EMPLOYMENT OF POLLUTION
      CONTROL EQUIPMENT BY 36 MONTHS PLUS ALL FUTURE
      REPLACEMENT CYCLES IN 1994 DOLLARS               $        8959
 D.   ECONOMIC BENEFIT OF A  36 MONTH DELAY
      IN 1994 DOLLARS (EQUALS B MINUS C)               $        2530
 E.   THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
      DATE,   50 MONTHS AFTER NONCOMPLIANCE            $        3850
                                                       =========


      ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                    USED THE FOLLOWING VARIABLES:
         USER SPECIFIED VALUES
         --------------------
       1A. CASE NAME = ENTITY X EXAMPLE
       1B. PROFIT STATUS =                       FOR-PROFIT
       1C. FILING STATUS =                       C-CORPORATION
        2. INITIAL CAPITAL INVESTMENT        = $        0
        3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $    20000  1997 DOLLARS
(TAX-DEDUCTIBLE EXPENSE)
        4. ANNUAL EXPENSE =                  $        0
        5. FIRST MONTH OF NONCOMPLIANCE =             2, 1994
        6. COMPLIANCE DATE =                          2, 1997
        7. PENALTY PAYMENT DATE =                     4, 1998
         STANDARD VALUES
         ---------------
        8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =   15 YEARS
        9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =  49.6 %
       10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =     38.6 %
       11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =  39.4 %
       12. ANNUAL INFLATION RATE =                          1.8 %
      13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL  10.6 %
```

EXAMPLE OF DELAYED ANNUAL EXPENDITURE
OUTPUT OPTION 2

SECOND RUN

```
ENTITY X EXAMPLE                          BEN VERSION 4.4 JULY 1, 1997

A.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
     OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $       11695
B.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
     OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
     REPLACEMENT CYCLES IN 1994 DOLLARS               $       11695
C.   VALUE OF DELAYING EMPLOYMENT OF POLLUTION
     CONTROL EQUIPMENT BY 36 MONTHS PLUS ALL FUTURE
     REPLACEMENT CYCLES IN 1994 DOLLARS               $        9120
D.   ECONOMIC BENEFIT OF A  36 MONTH DELAY
     IN 1994 DOLLARS (EQUALS B MINUS C)               $        2575
E.   THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
     DATE,   50 MONTHS AFTER NONCOMPLIANCE            $        3543
                                                       =========

    ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                    USED THE FOLLOWING VARIABLES:
        USER SPECIFIED VALUES
        --------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                           FOR-PROFIT
     1C. FILING STATUS =                           C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT        = $          0
     3. ONE-TIME NONDEPRECIABLE EXPENDITURE =  $      20000  1997 DOLLARS
    (TAX-DEDUCTIBLE EXPENSE)
     4. ANNUAL EXPENSE =                       $          0
     5. FIRST MONTH OF NONCOMPLIANCE =             2, 1995
     6. COMPLIANCE DATE =                          2, 1998
     7. PENALTY PAYMENT DATE =                     4, 1998
        STANDARD VALUES
        ---------------
     8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =    15 YEARS
     9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =  49.6 %
    10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =     38.6 %
    11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =  39.4 %
    12. ANNUAL INFLATION RATE =                          1.8 %
    13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL  10.6 %
```

EXAMPLE OF DELAYED ANNUAL EXPENDITURE
OUTPUT OPTION 2

THIRD RUN

```
ENTITY X EXAMPLE                          BEN VERSION 4.4 JULY 1, 1997


A.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
     OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $      11906
B.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
     OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
     REPLACEMENT CYCLES IN 1994 DOLLARS               $      11906
C.   VALUE OF DELAYING EMPLOYMENT OF POLLUTION
     CONTROL EQUIPMENT BY 36 MONTHS PLUS ALL FUTURE
     REPLACEMENT CYCLES IN 1994 DOLLARS               $       9284
D.   ECONOMIC BENEFIT OF A  36 MONTH DELAY
     IN 1994 DOLLARS (EQUALS B MINUS C)               $       2622
E.   THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
     DATE,   50 MONTHS AFTER NONCOMPLIANCE            $       3261
                                                       =========


     ->->->->->>  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                  USED THE FOLLOWING VARIABLES:
        USER SPECIFIED VALUES
        ---------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                       FOR-PROFIT
     1C. FILING STATUS =                       C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT        = $        0
     3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $    20000  1997 DOLLARS
   (TAX-DEDUCTIBLE EXPENSE)
     4. ANNUAL EXPENSE =                     $        0
     5. FIRST MONTH OF NONCOMPLIANCE =                2, 1996
     6. COMPLIANCE DATE =                             2, 1999
     7. PENALTY PAYMENT DATE =                        4, 1998
        STANDARD VALUES
        ---------------
     8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =     15 YEARS
     9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
    10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
    11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
    12. ANNUAL INFLATION RATE =                           1.8 %
    13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL   10.6 %
```

Exhibit B-8
(continued)

EXAMPLE OF DELAYED ANNUAL EXPENDITURE
OUTPUT OPTION 2

FOURTH RUN

```
ENTITY X EXAMPLE                          BEN VERSION 4.4 JULY 1, 1997

 A.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
      OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $       12120
 B.   VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
      OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
      REPLACEMENT CYCLES IN 1994 DOLLARS                 $       12120
 C.   VALUE OF DELAYING EMPLOYMENT OF POLLUTION
      CONTROL EQUIPMENT BY 36 MONTHS PLUS ALL FUTURE
      REPLACEMENT CYCLES IN 1994 DOLLARS                 $        9451
 D.   ECONOMIC BENEFIT OF A  36 MONTH DELAY
      IN 1994 DOLLARS (EQUALS B MINUS C)                 $        2669
 E.   THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
      DATE,   50 MONTHS AFTER NONCOMPLIANCE              $        3002
                                                         =========


    ->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                  USED THE FOLLOWING VARIABLES:
      USER SPECIFIED VALUES
      ---------------------
    1A. CASE NAME = ENTITY X EXAMPLE
    1B. PROFIT STATUS =                          FOR-PROFIT
    1C. FILING STATUS =                          C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT        = $          0
     3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $     20000  1997 DOLLARS
   (TAX-DEDUCTIBLE EXPENSE)
     4. ANNUAL EXPENSE =                        $          0
     5. FIRST MONTH OF NONCOMPLIANCE =                 2, 1997
     6. COMPLIANCE DATE =                              2, 2000
     7. PENALTY PAYMENT DATE =                         4, 1998
        STANDARD VALUES
        ---------------
     8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =    15 YEARS
     9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =  49.6 %
    10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =     38.6 %
    11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =  39.4 %
    12. ANNUAL INFLATION RATE =                          1.8 %
    13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL  10.6 %
```

Exhibit B-8
(continued)

EXAMPLE OF DELAYED ANNUAL EXPENDITURE
OUTPUT OPTION 2

FIFTH RUN

```
ENTITY X EXAMPLE                          BEN VERSION 4.4 JULY 1, 1997

A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $      12338
B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS               $      12338
C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
    CONTROL EQUIPMENT BY 36 MONTHS PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS               $       9621
D.  ECONOMIC BENEFIT OF A  36 MONTH DELAY
    IN 1994 DOLLARS (EQUALS B MINUS C)              $       2717
E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
    DATE,   50 MONTHS AFTER NONCOMPLIANCE           $       2763
                                                     =========

    ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                  USED THE FOLLOWING VARIABLES:
       USER SPECIFIED VALUES
       --------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                              FOR-PROFIT
     1C. FILING STATUS =                             C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT          = $         0
     3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $    20000  1997 DOLLARS
(TAX-DEDUCTIBLE EXPENSE)
     4. ANNUAL EXPENSE =                       $         0
     5. FIRST MONTH OF NONCOMPLIANCE =                2, 1998
     6. COMPLIANCE DATE =                             2, 2001
     7. PENALTY PAYMENT DATE =                        4, 1998
        STANDARD VALUES
        ---------------
     8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =   15 YEARS
     9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
    10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
    11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
    12. ANNUAL INFLATION RATE =                          1.8 %
    13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL  10.6 %
```

D.   HANDLING MUNICIPAL GRANTS

1.   Introduction

In some cases involving government entities or not-for-profit organizations, municipal grants are available to defer the cost of pollution control equipment or other compliance expenditures. Cost figures in BEN should be adjusted to account for any portion covered by federal or state grants. Such grants are most likely to

support only an initial expenditure (a one-time grant).[3] In some cases, by failing to comply on-time, an entity may have missed a grant opportunity because the funds are not available in the delay case. This section describes how to address cases involving municipal grants. There are three possible scenarios: 1) the grant was available in both the delay and the on-time case; 2) the grant was available only in the on-time case; 3) the grant was available only in the delay case. Note that in order to consider a grant available in the on-time case, the violator must conclusively demonstrate that the grant money was available, and that the violator would have received it had it applied.

2.   **One-Time Grant Available in Both the On-Time and the Delay Cases**

If the grant supports an initial capital investment (Variable 2) or a one-time nondepreciable expenditure (Variable 3), you must make the adjustment to the one-time nondepreciable expenditure value. Enter the difference between the total one-time nondepreciable costs and the amount of the grant as the adjusted one-time nondepreciable expenditure value. The difference will be negative if the original one-time expenditure is less than the grant amount or is zero. BEN will accept a negative value for Variable 3.

For example, suppose a project requires an immediate expenditure of $350,000; $275,000 to construct pollution control equipment and $75,000 to purchase land. You would normally enter $275,000 as the initial capital investment (Variable 2) and $75,000 as the one-time nondepreciable expenditure (Variable 3). Suppose, however, that a $100,000 construction grant will be made available to support the initial expenditure.[4] You would adjust Variable 3 to account for this one-time grant by subtracting the grant amount of $100,000 from the original one-time expenditure of $75,000. Thus, you would enter a negative $25,000 for Variable 3.[5]   The inputs for this example are shown in Exhibit B-9. Exhibit B-10 shows the BEN output for this one-time grant case. The economic benefit is $90,065.

Exhibit B-9

---

[3] In the event that the grant includes provisions for supporting future replacement cycles of equipment, the user should contact Jonathan Libber at the EPA Office of Enforcement for assistance.

[4] This assumes that the grant would have been available in the on-time case also. If not, see Section 4.

[5] If no one-time expenditure were required, you would enter a negative $100,000, the difference between zero and the $100,000 grant, as the value for Variable 3.

DATA INPUTS FOR EXAMPLE INVOLVING A ONE-TIME GRANT

```
1)   A. Case Name              ENTITY X EXAMPLE
     B. Profitability Status   1. For-Profit
     C. Filing Status          1. C-Corporation

2)   Capital Investment        $    275,000 1997 dollars
                                         recurring

3)   One-Time Nondepreciable   $   -25,000
     Expenditure

4)   Annual Expense            $     0

5)   Date of Noncompliance     February 1994

6)   Date of Compliance        August 1997

7)   Penalty Payment Date      April 1998

8)   Useful Life               15 Years

9)   Marginal Tax Rate -
     1986 and Before           49.6 percent


10)  Marginal Tax Rate -       38.6 percent
     1987 to 1992


11)  Marginal Tax Rate -       39.4 percent
     1993 and Beyond

12)  Inflation Rate            1.8 percent

13)  Discount Rate:  WACC      10.6 percent
```

Exhibit B-10

OUTPUT FOR EXAMPLE INVOLVING A ONE-TIME GRANT
OUTPUT OPTION 2

```
  ENTITY X EXAMPLE                        BEN VERSION 4.4 JULY 1, 1997


A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $      160405

B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS               $      234994

C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
    CONTROL EQUIPMENT BY 42 MONTHS PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS               $      175805

D.  ECONOMIC BENEFIT OF A  42 MONTH DELAY
    IN 1994 DOLLARS (EQUALS B MINUS C)               $       59189

E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
    DATE,   50 MONTHS AFTER NONCOMPLIANCE            $       90065
                                                     =========


    ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                   USED THE FOLLOWING VARIABLES:
       USER SPECIFIED VALUES
       ---------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                          FOR-PROFIT
     1C. FILING STATUS =                          C-CORPORATION
      2. INITIAL CAPITAL INVESTMENT (RECURRING)= $    275000  1997 DOLLARS
      3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $    -25000  1997 DOLLARS
         (EXPENSE IS NOT TAX-DEDUCTIBLE)
      4. ANNUAL EXPENSE =                         $        0
      5. FIRST MONTH OF NONCOMPLIANCE =                  2, 1994
      6. COMPLIANCE DATE =                               8, 1997
      7. PENALTY PAYMENT DATE =                          4, 1998
         STANDARD VALUES
         ---------------
      8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =    15 YEARS
      9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
     10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
     11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
     12. ANNUAL INFLATION RATE =                           1.8 %
     13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL  10.6 %
```

3.   Grant Available in "On-Time" Case Only

In some cases, grants may have been available if the violator had complied on time, but are not available in the delay case. Again, BEN is not designed to determine benefit in this instance, but you can use the outputs of the model to account for an expired grants program.

In the event that the grant would have been available only once, first follow the procedure for determining BEN when no grant is available (i.e., conduct a normal BEN run). Second, to calculate the economic benefit lost as a result of the missed grant opportunity, you must determine the value of the grant as of the penalty payment date. To do this, calculate the ratio of output (E) to output (D). Then multiply the result, I, by the original grant amount. This translates the value of the grant in the noncompliance year to its value as of the penalty payment date. Third, subtract the value of the grant from the economic benefit to calculate the total benefit of delayed compliance.

For example, assume that compliance requires a recurring $405,000 capital expenditure on equipment, as well as a $210,000 one-time cost and annual costs of $85,750. Further, had the violator complied on time, he or she would have received a $100,000 grant for the initial purchase of the equipment. However, due to the expiration of the grant program, this money is no longer available. The dates of noncompliance, compliance, and penalty payment are the same as in the preceding examples. The inputs are shown in Exhibit B-11. The outputs in Exhibit B-12 show that the economic benefit of the delay without a grant program is $453,194. In order to adjust that benefit for the missed grant opportunity, determine the ratio of (E) to (D):

$$I = \frac{E}{D} = \frac{\$419,879}{\$275,938} = 1.5216.$$

Multiply this result by the value of the grant:

$$A \times I = \$100,000 \times 1.5216 = \$152,160$$

Thus the economic benefit is the difference between:

$$\$419,879 - \$152,160 = \$267,719$$

It is possible for the effect of the missed grant opportunity to outweigh a positive economic benefit, making the total economic benefit negative. In the case above, however, the economic benefit of the delay is more valuable than the expired grant opportunity.

Exhibit B-11

DATA INPUTS FOR EXAMPLE OF MISSED GRANT OPPORTUNITY

```
1)    A. Case Name             ENTITY X EXAMPLE
      B. Profitability Status  1. For-Profit
      C. Filing Status         1. C-Corporation

2)    Capital Investment       $405,000 1997 dollars,
                               recurring

3)    One-Time Nondepreciable  $210,000 1997 dollars
      Expenditure              tax deductible

4)    Annual Expense           $85,750 1997 dollars

5)    Date of Noncompliance    February 1994

6)    Date of Compliance       August 1997

7)    Penalty Payment Date     April 1998

8)    Useful Life              15 Years

9)    Marginal Tax Rate -
      1986                     49.6 percent
      and Before

10)   Marginal Tax Rate -      38.6 percent
      1987 to 1992

11)   Marginal Tax Rate -      39.4 percent
      1993 and Beyond

11)   Inflation Rate           1.8 percent

12)   Discount Rate:  WACC     10.6 percent
```

Exhibit B-12

OUTPUT FOR EXAMPLE INVOLVING A MISSED GRANT OPPORTUNITY

OUTPUT OPTION 2

```
  ENTITY X EXAMPLE                        BEN VERSION 4.4 JULY 1, 1997


A.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE IN 1994 DOLLARS $      814440

B.  VALUE OF EMPLOYING POLLUTION CONTROL ON-TIME AND
    OPERATING IT FOR ONE USEFUL LIFE PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS                $     1095535

C.  VALUE OF DELAYING EMPLOYMENT OF POLLUTION
    CONTROL EQUIPMENT BY 42 MONTHS PLUS ALL FUTURE
    REPLACEMENT CYCLES IN 1994 DOLLARS                $      819597

D.  ECONOMIC BENEFIT OF A  42 MONTH DELAY
    IN 1994 DOLLARS (EQUALS B MINUS C)               $      275938

E.  THE ECONOMIC BENEFIT AS OF THE PENALTY PAYMENT
    DATE,   50 MONTHS AFTER NONCOMPLIANCE            $      419879
                                                          =========

    ->->->->->->  THE ECONOMIC BENEFIT CALCULATION ABOVE  <-<-<-<-<-<-
                  USED THE FOLLOWING VARIABLES:
       USER SPECIFIED VALUES
       ---------------------
     1A. CASE NAME = ENTITY X EXAMPLE
     1B. PROFIT STATUS =                              FOR-PROFIT
     1C. FILING STATUS =                              C-CORPORATION
     2. INITIAL CAPITAL INVESTMENT (RECURRING)= $    405000  1997 DOLLARS
     3. ONE-TIME NONDEPRECIABLE EXPENDITURE =   $    210000  1997 DOLLARS
        (TAX-DEDUCTIBLE EXPENSE)
     4. ANNUAL EXPENSE =                         $     85750  1997 DOLLARS
     5. FIRST MONTH OF NONCOMPLIANCE =                2, 1994
     6. COMPLIANCE DATE =                             8, 1997
     7. PENALTY PAYMENT DATE =                        4, 1998
        STANDARD VALUES
        ---------------
     8. USEFUL LIFE OF POLLUTION CONTROL EQUIPMENT =     15 YEARS
     9. MARGINAL INCOME TAX RATE FOR 1986 AND BEFORE =   49.6 %
    10. MARGINAL INCOME TAX RATE FOR 1987 TO 1992 =      38.6 %
    11. MARGINAL INCOME TAX RATE FOR 1993 AND BEYOND =   39.4 %
    12. ANNUAL INFLATION RATE =                           1.8 %
    13. DISCOUNT RATE: WEIGHTED-AVERAGE COST OF CAPITAL   10.6 %
```

4. **Grant Available in "Delay" Case Only**

Cases may arise in which a grant is available in the delay case that would not have been available had the violator complied on time. In such instances, the economic benefit will be larger than it would have been without the grant program. The violator earns two types of benefit from delaying compliance. The first component is the economic benefit associated with delaying expenditures that is calculated in typical BEN analyses. The second component is the value of the grant which, although it is spent on compliance, is a net benefit to the violator relative to the expenditures it would have been required to make in the on-time scenario.

These situations are most likely to arise when a municipality is aware of an impending grant program, and delays compliance in order to benefit from that program. These violators have no incentive to apprise the Agency of the grant opportunity, and the Agency will be largely responsible for determining when such opportunities are available and for considering them in the economic benefit calculation.

In order to calculate the first component of the economic benefit in these instances, BEN should be run as in a typical analysis to determine the benefit from delaying and avoiding capital, nondepreciable, and annual expenses. However, BEN cannot be used to determine the value of the grant opportunity (i.e., the second component of the municipality's benefit in these cases). In order to calculate this second component, the value of the grant should be compounded or discounted at the appropriate discount rate to the penalty payment date (depending on whether the compliance date is before or after the penalty payment date) and added to the economic benefit as calculated by BEN. The user should contact the U.S. EPA enforcement economics toll-free hotline at (888) ECON-SPT (326-6778) or benabel@indecon.com or consult a financial analyst for assistance in these cases.